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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte GREGORY A. BECKER, ROBERT CONDON,
DAVID A. KNIGHT, DAVID E. MEDDERS, and MICHAEL ROWAN

_____

Appeal 2009-004163
Application 10/614,347[1]
Technology Center 2100

_____

Before LEE E. BARRETT, DEBRA K. STEPHENS, and
JAMES R. HUGHES, *Administrative Patent Judges.*

HUGHES, *Administrative Patent Judge.*

DECISION ON APPEAL[2]

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[1] Application filed July 8, 2003. The real party in interest is Mendocino
Software, Inc. (App. Br. 3.)

[2] The two-month time period for filing an appeal or commencing a civil
action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing,
as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE"
(paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery
mode) shown on the PTOL-90A cover letter attached to this decision.

STATEMENT OF THE CASE

The Appellants appeal from the Examiner's rejection of claims 1-12, 14, 15, 20, and 26-32 under authority of 35 U.S.C. § 134(a). Claims 13, 16-19, and 21-25 have been canceled. The Board of Patent Appeals and Interferences (BPAI) has jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

Appellants' Invention

Appellants invented a computer data backup system and method that facilitates the recovery and/or restoration of data for a computer system. The computer system gathers data written to the computer system's storage devices (data writes), and stores the data writes and associated metadata for processing. The computer system may determine a change in data between points in time (a forward and/or backward increment) from the stored data writes and metadata, and update the backup system so that the data on the backup system matches that stored on the computer system at a particular point in time. (Spec. 1 ¶ [0001], 5-6 ¶¶ [0022]-[0024], 7-8 ¶¶ [0033]-[0036].)[3]

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[3] We refer to Appellants' Specification ("Spec."); Appeal Brief ("App. Br.") filed February 21, 2007; and Reply Brief ("Reply Br.") filed September 14, 2007. We also refer to the Examiner's Answer ("Ans.") mailed July 10, 2007.

Representative Claims

Independent claims 1 and 20 further illustrate the invention. They read as follows:

1. A method for maintaining a backup storage system for a data storage system comprising:

receiving a plurality of data writes from an application program, the plurality of data writes occurring between a first time and a second time;

determining a backward increment between data on the data storage system at the second time and data on the data storage system at the first time based on the plurality of data writes from the application program to the data storage system;

storing the backward increment;

storing the plurality of data writes; and

updating the backup storage system so that the data on the data storage system at the second time is the same as the data on the backup storage system at the second time.

20. A method for using a backup storage system for a data storage system comprising:

receiving a plurality of data writes captured between an application and the data storage system, the plurality of data writes occurring between a first time and a second time;

identifying data blocks in the data storage system that were changed based on the plurality of data writes;

applying the plurality of data writes to an image on the backup storage system;

determining a forward increment between data on the data storage system at the first time and data on the data storage system at the second time based on the plurality of data writes;

determining a backward increment between data on the data storage system at the second time and data on the data

storage system at the first time based on a plurality of data
writes;

storing the forward increment;

storing the backward increment;

storing the plurality of data writes; and

updating the backup storage system so that the data on
the data storage system at the second time is the same as the
data on the backup storage system at the second time.

Reference

The Examiner relies on the following reference as evidence of

unpatentability:

Goldstein   US 6,665,815 B1   Dec. 16, 2003
                                                           (filed June 22, 2000)

Rejection on Appeal

The Examiner rejects claims 1-12, 14, 15, 20, and 26-32 under 35

U.S.C. § 102(e) as being anticipated by Goldstein.

ISSUES

Based on our review of the administrative record, Appellants'

contentions, and the Examiner's findings and conclusions, the pivotal issues

before us are as follows.

1.   Does the Examiner err in finding the Goldstein reference

discloses receiving a plurality of data writes from an application program,

determining a backward increment of data on the data storage system based

on the plurality of data writes, storing the backward increment and the plurality of data writes, and updating a backup storage system?

2.   Does the Examiner err in finding the Goldstein reference discloses receiving a plurality of data writes captured between an application and a data storage system, and identifying data blocks in the data storage system that were changed based on the plurality of data writes?

FINDINGS OF FACT (FF)

Appellants' Specification

1.   Appellants explain that the operation of their system includes a "data write" and a "production image." (Spec. 7, ¶ [0033].) "[T]he primary system includes an application that writes data to a set of storage devices. The term 'production image' . . . represent[s] the data in . . . [the] storage devices." (*Id.*) The primary system captures or gathers the application's data writes to its production image and stores the application's writes in a separate storage device. (*Id.*) Appellants also explicitly define a "backward increment" – "the net change in the data of the production image from the second point in time to the first point in time . . . can be referred to as a backward increment." (Spec. 7-8, ¶ [0036].)

Appellants' Admissions

2.   Appellants' discuss the prior art Goldstein reference, and characterize the reference as follows: (1) "[a] snapshot of a disk is static capture of the entire contents of a volume at a single point in time," and "[t]he two snapshots taught by *Goldstein* are virtual copies of the disk volume," specifically "a consistent state of data in the data volume disk

storage," at two different times (App. Br. 12); (2) "*Goldstein* teaches incremental backups based on snapshots and differences between the snapshots" (*id.*); (3) "*Goldstein* teaches prior art snapshot techniques . . . to take snapshots . . . . [and] [t]he difference in data blocks among various snapshots is then utilized to generate succedent and precedent backups" (*id.* at 13); and (4) "it is possible, under certain circumstances, for data recovered according to one of the snapshots taken in *Goldstein* to be similar to the data recovered at a particular point in time in the present application" (*id.* at 9).

Goldstein Reference

3.   Goldstein describes a system and method for backing up computer data utilizing data volume snapshots and physical incremental backups. (Col. 1, ll. 7-11; col. 2, ll. 41-58.) The physical incremental backup process copies and backs up only changed data. "An important characteristic of the physical incremental backup is that only those data blocks that have changed are copied and not entire files. . . . With a physical incremental, only the data blocks containing the updated record, and possibly affected index blocks, are backed up." (Col. 5, ll. 41-48.)

4.   Goldstein describes a succedent physical incremental backup process in which data volume data is backed up using snapshots and snapshot difference lists. The process operates by taking a first snapshot (S_0, element 111) of the data volume data at time t_0 (101), creating a base backup (B_0, element 130), and a second snapshot (S_1, element 113) of the data volume data at time t_1 (103). The system then generates a first succedent snapshot difference list (121). Goldstein explains that a "snapshot difference list" is a list of identifiers of those data blocks that differ (change) between

6

snapshots. Goldstein updates the base backup by copying the data blocks identified in the succedent snapshot difference list from the second snapshot (113) into the backup, creating a first succedent backup (B_{01}, element 131). (Col. 3, l. 57 to col. 4, l. 40; Figs. 3 & 4.)

5.   Goldstein also describes a precedent physical incremental backup process, similar to the succedent physical incremental backup process. The process operates by taking a first snapshot (S_0, element 111) of the data volume data at time t_0 and a second snapshot (S_1, element 113) of the data volume data at time t_1. The system then generates a base precedent snapshot difference list (141). Goldstein creates a base backup (B_{10}, element 151) by copying the data blocks identified in the precedent snapshot difference list from the second snapshot (113). (Col. 6, ll. 7-60; Fig. 7.)

ANALYSIS

Appellants present arguments for independent claim 1 (App. Br. 11-13) and independent claim 20 (*id.* at 13-16). Appellants do not separately argue the patentability of independent claim 26 or dependent claims 2-12, 14, 15, and 27-32. (*Id.* at 13, 16; Reply Br. 4.) We accept Appellants' grouping of the claims, and choose independent claims 1 and 20 as representative of Appellants' arguments and groupings. Accordingly, we treat Appellants' claims 2-12, 14, 15, and 26-32 as standing or falling with representative claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

Issue 1: Rejection of Claim 1 under § 102

The Examiner finds that the Goldstein reference discloses each feature of Appellants' independent claim 1, and provides a detailed explanation as

to why Appellants' arguments fail to overcome the Examiner's anticipation rejection. (Ans. 3-4, 8-14.) Specifically, the Examiner finds that Goldstein discloses snapshots and data writes, the difference between the snapshots being a plurality of data writes, and a backward increment. (*Id.* at 12-13.) The Examiner also finds that Goldstein discloses storing the data writes and backward increment, and updating the backup storage. (*Id.* at 13-14.) Appellants, on the other hand, contend that the Goldstein reference does not disclose: "'receiv[ing] a plurality of data writes from an application program;'" or "'determining a backward increment between data on the data storage system at the second time and data on the data storage system at the first time based on the plurality of data writes from the application program to the data storage system.'" (App. Br. 12.) Appellants also contend that Goldstein does not disclose "'storing the backward increment; storing the plurality of data writes; [or] updating the backup storage system so that the data on the data storage system at the second time is the same as the data on the backup storage system at the second time.'" (*Id.* at 13.) Accordingly, we decide the question of whether the Examiner erred in finding the Goldstein reference discloses receiving a plurality of data writes from an application program, determining a backward increment of data on the data storage system based on the plurality of data writes, storing the backward increment and the plurality of data writes, and updating a backup storage system.

After reviewing the record on appeal, we agree with the Examiner's findings with respect to the Goldstein reference. Our reasoning follows.

The dispute before us hinges on whether Goldstein's snapshots and snapshot difference list comprise application data writes and a backward

increment as claimed. In particular, the Examiner and Appellants disagree on the data write and backward increment terminology – i.e., what constitutes a data write and a backward increment – the construction of these terms is critical to resolving this dispute. We begin our analysis by construing Appellants' claim, giving the claim the "broadest reasonable interpretation consistent with the [S]pecification" and "claim language should be read in light of the [S]pecification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (citations omitted). Appellants explain in their Specification that data writes constitute data written to a set of storage devices, and that a backward increment is the net change in the data written to the storage devices (of the production image) between a second point in time and a first point in time. (FF. 1.) Thus, we construe the disputed limitations to simply mean receiving data from an application program written to system storage devices between a first time and a second time, and determining the net change in the data written to the system storage devices between the first and second time based on the data written to the system storage devices.

Appellants and the Examiner agree (and we find) that the Goldstein reference discloses snapshots of data, specifically data in disk storage at different times, as well as incremental backups based on the snapshots and differences between the snapshots. (FFs. 2-5.) In particular, Appellants admit that the Goldstein reference discloses utilizing the "difference in data blocks among various snapshots . . . to generate succedent and precedent backups." (FF. 2.) We agree with the Examiner that the difference between Goldstein's snapshots constitutes data written to system storage devices

9

between a first time and a second time – i.e., a plurality of data writes. (Ans. 12-13.) We find, as did the Examiner, that at least a portion of the data written to the storage devices would have been from application programs. (Id.)

In view of Appellants' broad definition of a backward increment, we also agree with the Examiner that Goldstein's snapshot difference list (specifically, the precedent snapshot difference list) constitutes a backward increment between Goldstein's snapshots. (Ans. 13-14.) Specifically, we find that Goldstein discloses generating snapshot difference lists comprising a list of identifiers of data blocks that change between snapshots at a first and a second time. (FFs. 4-5.) Goldstein determines from these lists the net change in the data written to the system storage devices between the first and second time.

We further agree with the Examiner that Goldstein discloses storing the snapshots and difference lists. (Ans. 13-14.) Finally, in view of Appellants' admissions that Goldstein discloses utilizing the difference in data blocks among snapshots to generate succedent and precedent backups (FF 2), we agree with the Examiner that Goldstein discloses updating the backup storage system so that the data on the computer system and backup storage system are the same at a second time. Thus, we find that Goldstein discloses each feature of Appellants' claim 1.

We are not persuaded by Appellants' arguments that Goldstein fails to disclose receiving a plurality of data writes and determining a backward increment. Appellants appear to argue that the claim requires storing individually each and every data write so that data can be recovered at any point in time. (App. Br. 11-13.) We note, however, no such limitation

appears in the claim. Appellants' arguments are not commensurate with the
scope of their claim. For all the foregoing reasons, Appellants have not
persuaded us to find error in the Examiner's anticipation rejection of claim
1. As we explained *supra*, Appellants' independent claim 26 and dependent
claims 2-12, 14, 15, and 27-32 fall with representative claim 1. Therefore,
we affirm the Examiner's rejection of independent claim 26 and dependent
claims 2-12, 14, 15, and 27-32.

Issue 2: Rejection of Claim 20 under § 102

The Examiner finds that the Goldstein reference discloses each feature
of Appellants' independent claim 20. (Ans. 7, 14-16.) Specifically, the
Examiner finds that "[t]he method of claim 20 is similar to claim 1, except
that it uses both [a] forward increment and [a] backward increment. (*Id.* at
14.) Appellants contend that the Goldstein reference does not disclose:
"'receiving a plurality of data writes captured between an application and the
data storage system . . . . between a first time and a second time'" or
"'identifying data blocks . . . that were changed based on the plurality of data
writes.'" (App. Br. 14; *see also id.* at 12.) Accordingly, we decide the
question of whether the Examiner erred in finding the Goldstein reference
discloses receiving a plurality of data writes captured between an application
and a data storage system, and identifying data blocks in the data storage
system that were changed based on the plurality of data writes.

After reviewing the record on appeal, we agree with Appellants that
the Goldstein reference does not disclose the disputed features. As with
claim 1, the dispute hinges on the construction of the limitation directed to
data writes. Appellants recite "receiving a plurality of data writes *captured*

between an application and the data storage system . . . . between a first time and a second time." (App. Br. 20, Claim App'x, claim 20, emphasis added.) We construe this limitation to mean receiving data gathered, by indeterminate means, as it is written from an application program to system storage devices between a first time and a second time. Based on our construction of the data write limitation, we construe "identifying data blocks in the data storage system that were changed based on the plurality of data writes" (*id.*) to mean identifying data blocks in the data storage system that change between a first and a second time based on the data gathered as it is written from an application program to system storage devices. Therefore, claim 20 varies considerably in scope from claim 1. Although Goldstein discloses snapshots and snapshot difference lists, Goldstein does not disclose capturing or gathering data as it is written in order to create a back up. Rather, both Appellants and the Examiner agree that Goldstein's snapshots are pictures of the data in a data storage device at a particular point in time. (App. Br. 12, 14; Ans. 12-14.) Thus, we agree with Appellants that Goldstein does not disclose receiving a plurality of data writes captured between an application and the data storage system between a first time and a second time – i.e., data gathered as it is written from an application program to system storage devices – and identifying data blocks in the data storage system that were changed based on the plurality of data writes. Accordingly, Appellants have persuaded us to find error in the Examiner's anticipation rejection of claim 20. Therefore, we reverse the Examiner's rejection of this claim.

CONCLUSIONS OF LAW

The Examiner did not err in finding the Goldstein reference discloses receiving a plurality of data writes from an application program, determining a backward increment of data on the data storage system based on the plurality of data writes, storing the backward increment and the plurality of data writes, and updating a backup storage system.

The Examiner erred in finding the Goldstein reference discloses receiving a plurality of data writes captured between an application and a data storage system, and identifying data blocks in the data storage system that were changed based on the plurality of data writes.

DECISION

We affirm the Examiner's rejection of claims 1-12, 14, 15, and 26-32 under 35 U.S.C. § 102(e).

We reverse the Examiner's rejection of claim 20 under 35 U.S.C. § 102(e).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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